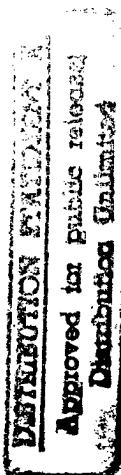
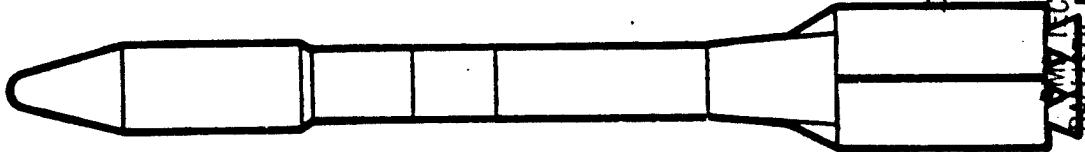


2.2.2

# All Solid Motor Launch Vehicle



1 MAY 1987

MORTON THIOKOL, INC.

Wasatch Operations

Strategic Division

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Abstract: The objective of the briefing was to provide a concept of Morton Thiokol's new launch vehicle.

Descriptors, Keywords: solid motor launch vehicle Peacekeeper rocket production modular launch configuration technology flight readiness payload cost

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# All Solid Motor Launch Vehicle

G. W. Broman  
Director, Peacekeeper Program

## Objectives

- **To provide you with an understanding of our concept for a new launch vehicle**
- **To illicit your response to this new concept and obtain your help in defining the solution**

## Product Line Plan

- o Use the Stage I Peacekeeper to develop a reliable low-cost solid motor launch vehicle system
  - o 1980's technology
  - o Production line in-operation
- o Provide family of launch configurations
  - o Modular approach
  - o Minimize payload-in-orbit cost
- o Achieve lower cost launch vehicle system
  - o Use demonstrated "off-the-shelf" technology for balance of system
- o Support early flight readiness
  - o 24 months to 1st flight

## Perception of Need

- o Backlog of satellite launches due to non availability of compatible launch systems
  - o Expendable launch vehicles
  - o Nonexpendable launch vehicles
- o No priority available for commercial payloads
- o Many payloads with no identified launch systems
- o Requirement exists for reliable, lower cost launch system

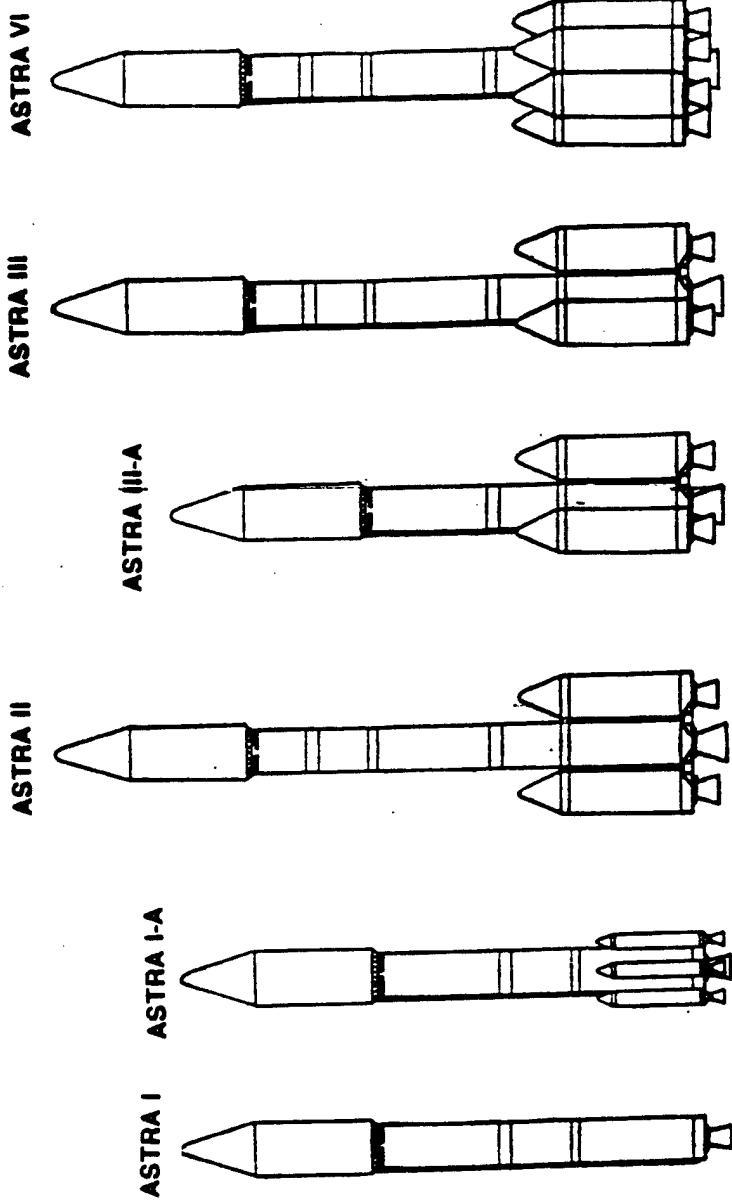
## Product Line Advantages

- o Majority of vehicle from "ongoing" MTI production
- o Offers a family of vehicles which can provide broad range of capability at minimum user cost including
  - o Launch-On Warning (LOW)
  - o Launch-On Demand (LOD)
- o Concept requires minimal launch permanent crew
- o Can commit to firm launch dates without threat of preemption
- o "Listens to needs of the users"

## Design Options

- o All options based on use of Peacekeeper Stage I
- o New third stage motor use
  - o Star 75 or
  - o Shorter Peacekeeper Stage I
- o Combine motors to form "family" of launchers

## ASTRA Configurations



Stage	0	PK (2)	PK (3)	PK (6)
I	PK	PK	PK	PK
II	PK	PK	PK	PK
III	Star 75	Star 75	Star 75	SPK
		13,100	11,200	22,000
		4,500	5,040	5,960
		1,730	4,300	8,460
		0	637	2,137
				2,975
				2/1,786
				or
				1/3,814

**Payload to LEO (lb) 100 nm**

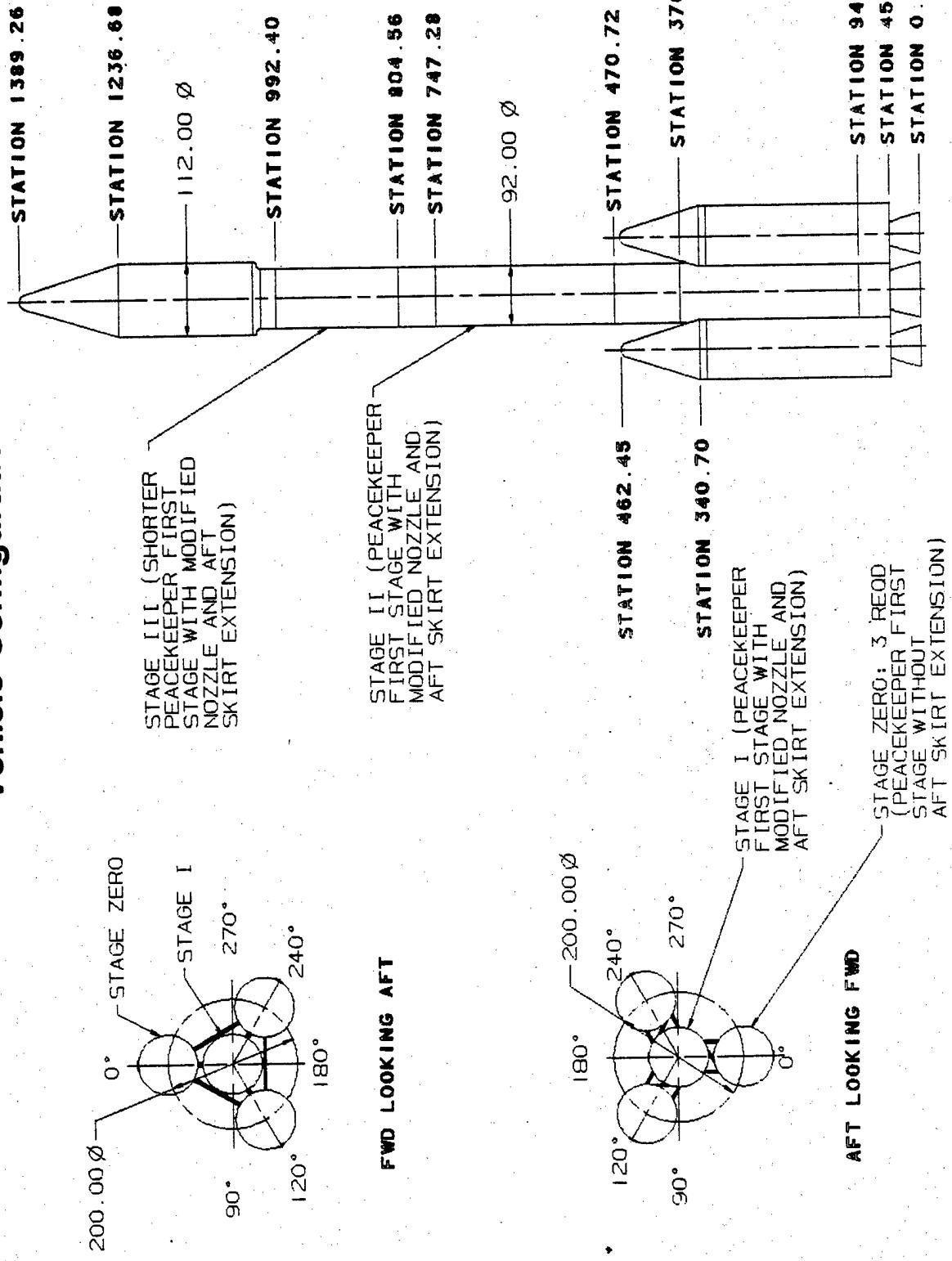
**Payload to GTO (lb)**

**Spacecraft to GEO (lb)**

## ELV Concept Comparison

Orbit	Delta (1) McDonnell Douglas	Modified Delta (1) McDonnell Douglas	Atlas Centaur General Dynamics	Titan 34D Martin Marietta	ASTRA Morton Thiokol
LEO (100 nmi)	7,910 - 8,455 1,450	8,780 - 11,110 2,850	12,300 2,630	32,900 4,200	15,500 2,975
GEO					

## Vehicle Configuration



## **Customer Assessment**

- o Are you in need of such a launch vehicle?
- o What do you need to better develop our joint understanding?